vided for him, and endeavour to solve the problems which underlie weather changes and the general movements of the atmosphere.

JOSEPH LEIDY, M.D.

THIS well-known American naturalist was born on September 9, 1823. He very early in life showed a fondness for collecting and observing insects, one of his first contributions being a paper on the mechanism which closes the membranous wings of the genus Locusta, published in 1845 in the Proceedings of the Academy of Natural Sciences of Philadelphia. Having taken his degree in medicine, he devoted himself more and more to the study of natural history, and few men of any nation have left behind them a longer list of work done than this distinguished man, whose death we announced in a recent number. Leidy was gifted with great powers of observation, he possessed a correct eye and steady hand for the delineation of whatever objects he was observing, he was endowed with a faculty for work; and as he had also an excellent memory, one reflects upon his half-century of work with less of surprise than admiration. To give an account of his writings would be to write a volume, to give but their titles would be to fill many of our columns, so that it must suffice to call to mind rather the subjects about which he wrote than the writings. Commencing with a study of entomology, and working more at the anatomy than at the general morphology of insects, he quickly passed on to the study of the entophytic worms, his "Flora and Fauna within Living Animals," published as one of the Smithsonian Contributions in 1852, having made its mark at the time. Then he took up the fresh-water Polyzoa, his labours on which will be understood only when a monograph on this group as inhabiting America comes to be published. Leaving for a time the study of invertebrate forms, he next entered on the field of research among the fossil vertebrates, describing in quick succession a number of remarkable fossil reptiles and fish, and he was the author of the first volume of the quarto series of reports issued by the United States Geological Survey of the Territories, under the title of "Contributions to the Extinct Vertebrate Fauna of the Western Territories." It was during his journeys to the Western Territories, that, not content with investigating the fossil vertebrates of the district, he worked very diligently at the study of the microscopic forms of life which inhabit the waters met with therein, and these researches, so far as one group of animals is concerned, were happily published by the United States Geological Survey in 1879, in one large quarto volume, "The Fresh-water Rhizopods of North America," which is illustrated by forty-eight coloured plates after Leidy's own drawings. This work on its appearance was received with great enthusiasm, and is still a worthy model for a monograph. During all these years, and amid so many and so varied labours, Leidy still discharged his duties as Professor of Anatomy to the University of Pennsylvania, and also of teacher of natural history to the classes of boys and girls at the Swarthmore College. No doubt many of these latter pupils will now call to mind the warm personal interest their master always took in their labours. In one of his books he tells us that since he was fourteen years of age the study of natural history was to him a constant source of happiness; but that on this joy a shadow was constantly cast when he thought how few, how very few, of those around him gave any attention to intellectual pursuits of any kind, and it saddened him to feel that the command "that man shall not live by bread alone" remained so unappreciated by the great mass of even so-called enlightened humanity. The results of Leidy's intellectual pursuits will long remain to testify to the manner of man that he was.

THE SCIENCE MUSEUM.

THE discussion on this all-important question continues in the press. The Whitsuntide holidays have prevented any questions being asked in the House of Commons, where the feeling is very strong against the action of the Government.

As before, we reprint the most important items in the discussion. These consist of letters from Sir H. Roscoe and Profs. Armstrong and Ayrton to the *Times*. We commend to our readers the reference by the latter to Mr. Goschen's treatment of the deputation, and also their judgment as to the present position of science in this country, and the teaching of it in London, as compared with Göttingen and Zürich. No one can speak with greater authority than Profs. Armstrong and Ayrton on this subject.

Our administrative system, however, is such that the present question, which is acknowledged to be of such high importance, is being settled exclusively by officials who are quite ignorant of science. This is not said to their disparagement: it is only a statement of fact. The letters run as follow:—

ONE cannot but feel much sympathy for Ministers, on the one hand pressed by the advocates of scientific and technical education, and on the other nervous at the prospect of not securing the gifts of the munificent but somewhat *exigeant* art donor. But the question is so vitally important from the point of view of science that I feel sure no excuse is necessary if I urge most strenuously that an irrevocable step be not taken without full and careful consideration; and, further, that a definite scheme for providing for the science collections and Science School be formulated before what many of us believe to be a most unwise interpolation of an art gallery, on land which when bought was universally believed to have been acquired for scientific ends, is finally decided on.

At the present moment it is impossible to say under which thimble the scientific pea is housed, and it was no doubt due to this that the discussion which the deputation had with the Chancellor of the Exchequer and Lord President of the Council on Tuesday last was to some extent abortive.

The Chancellor of the Exchequer, in reply to myself on March 18, said:—

"It would be possible to make adequate provision for chemical and physical laboratories on the land between the Imperial Institute Road and the Technical Institute. This site adjoins the east galleries, and it is in these galleries, together with the west and southern galleries, and a proposed cross gallery joining the east and west galleries, that the science collections may ultimately be housed."

But by April 15 the impracticability of the scheme of putting part of the Science School at the south end of the eastern gallery seems to have been discovered. For on that day Mr. W. H. Smith, in reply to Mr. Mundella, propounded another scheme for the Science School, while leaving the collections to be housed in the east and west and cross galleries. He said:—

"A portion of these vacant lands" (facing the Imperial Institute) "can be utilized for the extension of the College of Science and for future growth of the science collections. Additions to the College of Science must in any case take the form of a separate building, divided from the present building by Exhibition Road; and, as access to the lands mentioned above from Exhibition Road will be secured by means of a corridor, the interposition of the Gallery of British Art need have no more serious effect than to increase by some 60 yards (which will be under cover) the distance between the two portions of the Science College."

By the former plan a portion of the Science School would no doubt have been in immediate contact with the splendid picture galleries in which the science objects were to be housed; but it would be far removed from the other part of the school—the Exhibition Road thus becoming a school of peripatetic philosophy. By the latter scheme the two parts of the school would be brought somewhat closer together—less of Exhibition Road and more of covered corridor—but then both portions would be entirely separated from the science collections—two roads to cross, and a walk of half a mile, or thereabouts, to the further part.

When receiving the deputation on Tuesday last, a third scheme was suggested, if not distinctly enunciated, by the Chancellor of the Exchequer, that the Science School extension and the Science Museum should be built on the other side of the plot given to the Art Gallery, but both on the ground recently acquired facing the Imperial Institute.

The two earlier projects having as it were blown themselves up, it is only necessary for me to deal with the last.

It has been argued that the recent Committee on the science collections, of which I was a member, only asked for 90,000 square feet of exhibiting space, and that more than that area can be obtained on the vacant ground opposite the Imperial Institute. But it must be remembered that, as stated by our Committee, this space did not provide for offices, workshops, &c.—a considerable item; that it did not in any way provide for the extension of the Science School; and that it was made some time before an immense impetus was given to technical education by the Technical Instruction Acts and the grants under the Customs and Excise Act of last year.

Now, the vacant ground recently acquired—omitting the strip part of which has already been sold, and the remainder of which is going to be sold for private dwelling houses—is about one-third of the land devoted to the Natural History Museum, and almost exactly of the same area as that already covered by the Natural History Museum buildings, which are shortly to be enlarged.

Is it unreasonable for the scientific man to urge that this vacant land is not too much to provide for the whole range of sciences other than those accommodated in the Natural History Museum; for a proper Museum of Machinery and Inventions; for a large extension of the Science School; and possibly for the collections from the Jermyn Street Museum? Surely there can be but one answer to this question.

Why—and we have never yet obtained an answer to this inquiry—will not the munificent donor be satisfied with another site? Why are the existing physical laboratory and scientific class-rooms to be removed, to allow an art gallery to be interposed between portions of the school?

Even if it be maintained that the ground south of the Imperial Institute Road will provide for the immediate wants of the Science School and collections, is it too much to ask that we should look a little ahead, and not now initiate another hugger-mugger arrangement of the collections and schools at South Kensington, which all will lament in a few years?

10 Bramham Gardens, S.W., HENRY E. ROSCOE.
May 15.

NOTWITHSTANDING that the recent deputation to the President of the Council and the Chancellor of the Exchequer was headed by Sir William Thomson—the man of science whom we in this country regard as first among all others, both on account of his individual achievements and on account of his occupying the representative position of President of the Royal Society—not one single word was said by Mr. Goschen in explanation or justification of the course which he has adopted; we therefore venture, with all respect, to assert that the Royal Society has just cause to complain when one of its Fellows—for Mr. Goschen is one of us—thus treats representations urged by its President.

Where the science collections are to be lodged, where the extensions of the Science Schools are to be placed, are in themselves all-important questions; but a still graver issue remains—whether a weight of opinion of the magnitude represented by the memorial recently published in your columns is to be entirely set aside because an anonymous donor has offered £80,000 *plus* a collection of pictures, valued at another £75,000. That a Government which has at its head a Prime Minister whose interest in science is so marked, should thus disregard the opinion offered by so representative a body of men, is one of those things which even an Englishmen can scarcely understand: in no other country in Europe would such action be possible.

We cannot help thinking that a mistake has been made in calling public attention too exclusively to the housing of the science collections—the extension of the Science Schools appears to be a far more important matter. Attention has often been called of late to what is going on abroad, especially in Germany; to the unremitting attention that is being given to scientific instruction, and to the effect that is being produced on manufacturing industries of all kinds by the high development of science and of the application of every kind of scientific requirement. Unfortunately, in this country such matters have not yet entered into the domain of practical politics. But in the opinion of many among us there cannot be a question that almost superhuman efforts are necessary if this country is to regain the position which it has given away to foreigners by its neglect to apply the highest developments of chemical and physical science to industry.

The accommodation at present afforded by the Royal College of Science laboratories is not only inadequate, but beneath contempt in comparison with that to be found in Continental cities, such even as Göttingen and Zürich, for example; and those of us who have some knowledge of modern requirements know full well that every inch of space on the Imperial Institute Road side of the block of land on which stands the Natural History Museum will before long be required for the purposes of the Royal College of Science. The intrusion of an art gallery into this space would have a most disastrous effect by irretrievably preventing the proper and natural expansion of the Royal College of Science laboratories. This expansion must necessarily be rapid, for science is developing throughout the civilized world at a compound interest rate, and the grants recently made by the Chancellor of the Exchequer in aid of technical instruction must lead even this country to fully appreciate the value of experimental studies, and to insist on proper laboratory accommodation being provided.

Surely the munificent donor will accept for his gallery some other site equally good for art, and not insist on striking a blow at science by taking a piece of land already set apart for laboratories.

HENRY E. ARMSTRONG,
Secretary of the Chemical Society.
W. E. AYRTON,
President of the Physical Society.

It seems probable that, as the discussion goes on, some side light will be thrown upon the motives of those who have the "munificent donor" in hand. Although we have not room for the whole of a letter from Mr. Marshall of Edinburgh, the general drift of it may be stated as follows:—

Mr. Marshall's main point is that, according to the statements made by Sir Frederick Leighton in his speech at the Royal Academy banquet, the new gallery is to be used as "a worthy home for the permanent display of the works of contemporary native artists"—which "means, being interpreted," says Mr. Marshall, "a worthy home for the works of Royal Academicians and their friends." The object for which Sir James Linton, Sir J.C. Robinson, Mr. Orrocks, and others have been contending is that there should be adequate "recognition throughout its whole range, both as regards masters and mediums of work, of the artistic triumphs of the masters of our English school." What these gentlemen have urged and incontestably proved is that while foreign art, and especially early Italian art, is fully if not excessively represented in our National Gallery, and while a few of our great native artists (notably Turner and Constable), and many of our small ones, are represented far beyond what is necessary or even desirable, our native water-colour art is practically not recognized at all, and many of the very greatest of our masters in oil, who were (most of them) masters in water-colour also—Cox, Miller, Barret, De Wint, Crome, Cotman, Stark, Vincent, and others—are either conspicuous by their absence, or miserably represented as regards quality or quantity or both. If the public wants a "permanent display of the works of contemporary native artists," and if a generous millionaire is willing to provide "a worthy home" for such productions, the thing can be done. "But I object," continues Mr. Marshall, "to our astute Academicians, with the accomplished President at their head, calmly stepping in and absorbing a movement at the very moment of its success, diverting it from its legitimate purpose, and, after having stoned the prophets of English art while they lived, now endeavouring to steal the stones that others have quarried and hewn for the martyrs' monument in order to erect with them another comfortable mansion for themselves." Mr. Marshall is of opinion that "provincials" have opportunities more than enough of seeing contemporary art. Their wish now is to have a chance of studying fine specimens, authoritatively selected, of the acknowledged masters of our English school.

The possible existence of such special motives as those here suggested among the persons who are attempting to get a grant of land for the carrying out of their so-called national objects should form an additional inducement to men of science to redouble their efforts.

NOTES.

THE general programme for the Cardiff meeting of the British Association has now been arranged. The first meeting will be held on Wednesday, August 19, at 8 p.m., when Sir Frederick Abel, K.C.B., will resign the chair, and Dr. William Huggins, President-elect, will assume the presidency and deliver an address. On Thursday evening, August 20, at 8 p.m., there will be a *soirée;* on Friday evening, August 21, at 8.30 p.m., a discourse on "Some Difficulties in the Life of Aquatic Insects," by Prof. L. C. Miall; on Monday evening, August 24, at 8.30 p.m., a discourse by Prof. T. E. Thorpe, F.R.S.; and on Tuesday evening, August 25, at 8 p.m., a *soirée.* On Wednesday, August 26, the concluding general meeting will be held at 2.30 p.m.

THE arrangements for the International Congress of Hygiene and Demography are nearly complete, and the programme, corrected up to May 1, has been issued in the form of a pamphlet. It has been definitely fixed that the opening meeting, at which the Prince of Wales is to preside, shall be held on Monday, August 10, at 3.30. The sections (of which there are ten) will meet on the four following days from 10 to 2. The six medical and scientific sections will meet in the rooms of the Royal and other learned Societies at Burlington House. The University of London will give the use of its large theatre to the section for the hygiene of infancy and childhood, and two examination halls to the sections for architecture and engineering. The division of demography will meet in the Theatre of the School of Mines, Jermyn Street. Much attention is being given to the necessary social preparations; and there is already a long list of proposed entertainments and excursions.

A GENERAL meeting of the Federated Institution of Mining Engineers will be held in London on Thursday, the 28th inst., at 12 noon, and on Friday, the 29th, at 10 a.m., in the rooms of the Institution of Civil Engineers, 25 Great George Street, Westminster. Various works will be visited on the 29th inst.

THE Committee of the Cardiff Naturalists' Society have put on foot a petition in favour of Mr. Pease's "Bill to Amend the Wild Birds' Protection Act, 1880." They are appealing to other scientific societies to join with them in order to make the petition as effective as possible.

AT Mowbray, a suburb of Cape Town, Mr. Cecil Rhodes has bought for £16,000 land on which, it is understood, the proposed University is to be built.

THE death of Prof. Carl Wilhelm von Nägeli, the eminent botanist, is announced. He died at Munich, on the 10th inst., in the 74th year of his age, and will be buried at Zürich, in accordance with a wish expressed before his death. Prof. von Nägeli was a Foreign Member of the Royal Society. We hope on a future occasion to give some account of his scientific labours.

THE Australian papers announce the death of Dr. Richard Schomburgk, brother of the late Sir Robert Schomburgk, and for many years Director of the Botanic Gardens at Adelaide, South Australia. Dr. Schomburgk was associated with his brother in the Boundary Demarcation Commission of British Guiana in 1840, and, some years later, settled with another brother in South Australia as a farmer and wine-grower. On the death of Mr. Francis, in 1866, he was offered, and accepted, the post of Director of the Adelaide Botanic Gardens, which he held with much distinction until his death. He was an enthusiastic horticulturist, rather than a botanist—that is to say, as an author; and his services in connection with the establishment he directed were very highly appreciated, as the sketches of his career testify. Indeed, so long ago as 1883, a large number of his admirers subscribed the funds to procure his portrait for the Museum of Economic Botany, founded by himself. His literary work commenced, we believe, with his "Reisen in Britisch Guiana in den Jahren 1840–1844," the third volume of which is devoted to a "Versuch einer Flora und Fauna von Britisch Guiana," in which Schomburgk had the assistance of several other botanists. This work has not yet been superseded, though its usefulness is unfortunately much limited by the publication of a large number of new names without descriptions. In 1876, Dr. Schomburgk supplemented this work by his "Botanical Reminiscences of British Guiana." But his most valuable literary work relates to the botany, to the agricultural and horticultural capabilities of his adopted country, and especially to the Botanic Garden, of which he was to a great extent the creator. His name will long be remembered in connection with this establishment, which is, it is asserted, the "most complete paradise of flowers in the southern hemisphere."

ACCORDING to the Calcutta correspondent of the *Times*, the Miranzai Expedition, under Sir W. Lockhart, has obtained much valuable geographical information about places which, although within a few miles of the frontier, have been hitherto unvisited by Europeans. The surveys effected by the Kuram field force during the Afghan war have been carried on to the Kurmana Valley.

A RUSSIAN scientific expedition, under the command of Captain Bartshevsky, has left Samarcand for the exploration of Southern Bokhara, the Pamir district, and Kafiristan.

ON Saturday, May 30, at the Royal Institution, Prof. A. H. Church, Professor of Chemistry in the Royal Academy of Arts, will begin a course of three lectures on the scientific study of decorative colour.

THE Rev. H. N. Hutchinson has undertaken to write for Messrs. Swan Sonnenschein and Co.'s "Introductory Science Text-books" a manual of physical geology. A second edition of Dr. Hatch's "Petrology" in the same series, reviewed in our columns last week, has already appeared.

MESSRS. WHITTAKER & CO. have in preparation a "Library of Popular Science." Among the works to be included in it are "Astronomy," by G. F. Chambers; "Light," by Sir H. Trueman Wood; "Chemistry," by T. Bolas; "Mineralogy," by Dr. F. H. Hatch; "Electricity and Magnetism," by S. Bottone; "Geology," by A. J. Jukes-Brown; "Botany," by G. Massee.

MR. J. ALLEN BROWN has expounded in the *West Middlesex Standard* an excellent scheme—now printed separately—for a technical institute and museum for the Ealing Parliamentary division of Middlesex. This division comprises Ealing, Acton, and Chiswick, and Mr. Brown's proposal is that a technical institute and museum should be established in whatever position may be most convenient for these localities. An essential part of his plan is that the instruction shall be imparted by specially qualified teachers and lecturers, and that their duties shall be "migratory or peripatetic," so that classes may be conducted or lectures given in any part of the division, and on any of the subjects contemplated under the Technical Instruction Acts. We commend Mr. Brown's scheme to the careful attention of the Middlesex County Council, which will soon have to decide as to the distribution of the funds placed at its disposal for technical instruction. There can be no doubt that the proposed institutions would be of immense advantage to the three districts, for Mr. Brown has a very enlightened conception of the true nature of technical instruction. What he wishes is that the